MARSHALL STAR

Marshall Space Flight Center — March 29, 2001

'We bring people to space — We bring space to people'

Inside the Star

NASA, Alabama officials celebrate science research center opening

by Sherrie Super

The National Space Science and Technology Center (NSSTC) — a venture that brings together researchers and educators — made its official leap from the drawing board to reality Monday as the center celebrated the grand opening of its core facility in Huntsville.

Marshall Center Director Art Stephenson and Dr. Frank Franz, president of the University of Alabama in Huntsville (UAH), co-hosted the ceremony. Leading the ribbon cutting were Alabama dignitaries including U.S. Rep. Bud Cramer of Alabama's 5th Congressional District.

A partnership with the Marshall Center, universities and federal agencies, the NSSTC is a clearinghouse for cutting-edge research in space science, Earth sciences, information technology, optics and energy technology, propulsion, biotechnology and materials science and supports NASA's mission of advancing and communicating scientific research.

Stephenson welcomed attendees, including educators, scientists and representatives from local industry. "Our success is dependent upon bringing

*See **NSSTC** on page 3*

Young, Crippen to join Marshall team to mark STS-1 anniversary

Marshall team members are invited to a celebration on April 24 to mark the 20th anniversary of the first Space Shuttle mission.

Marshall employees, on-site contractors and retirees will welcome special guests, STS-1 Commander John Young and Pilot Robert Crippen.

A new mode of space travel was ushered in when the Space Shuttle Columbia left the launch pad at Kennedy Space Center on April 12, 1981. That mission, like every Shuttle mission since that date, was powered by Shuttle propulsion elements provided by the Marshall Center.

The April 24 event will be held from 10 a.m. to 1 p.m. at the Bldg. 4752 North Structure. To kickoff the celebration, Center Director Art Stephenson and Marshall Shuttle Projects Office Manager Alex McCool will invite Young and Crippen to share their STS-1 reminiscences and sign a Space Shuttle Main Engine to be displayed at the Marshall Center. Stephenson will share his perspective on the significance of the anniversary. In addition, the astronauts will cast their footprints as part of Marshall's "Footprints to the Future" collection. Lunchtime entertainment will include the greatest musical hits from 1981.

More information will be published in an upcoming edition of the Marshall Star.

Photo by Mike Leberman

FIRST Robotics heads to Orlando

Jamie King, left, Robert Young Sr., center, and Roy Patterson III, members of the Arab "Dragon Slayers" FIRST Robotics team, make last-minute repairs before competition at Kennedy Space Center, Fla. See story on pages 4-5. The three Marshall-sponsored teams head to Orlando, Fla., for the national FIRST (For Inspiration and Recognition of Science and Technology) Robotics competition April 5-7.

NASA administrator recognized for outstanding leadership in minority higher education

NASA release

Recognized as one of the visionary leaders in involving Historically Black Colleges and Universities (HBCUs) and other minority serving institutions in innovative science, technology and research, NASA Administrator Dan Goldin was honored March 23 with the Federal Leadership Award by the National Association for Equal Opportunity in Higher Education (NAFEO).

Goldin

The award is presented to leaders in the federal government who have demonstrated outstanding leadership in advancing Historically Black Colleges and Universities and other minority serving institutions in their efforts to educate the nation's next generation of scientists and engineers.

NAFEO is an advocate for 118 of the nation's historically and predominantly black colleges and universities. Its mission is to champion their interests through the executive, legislative and judicial branches of federal and state government and to articulate the need for a system of higher education where race, ethnicity, socio-economic status and previous educational attainment levels are not determinants of either the quantity or quality of higher education.

"I am pleased to be honored by an organization that champions equal opportunity efforts in higher education," Goldin said. "I can assure you that the NASA's commitment and support for HBCUs and other minority serving institutions of higher learning will remain steadfast as we strive to further the nation's agenda in science and technology."

Goldin accepted the award at NAFEO's 26th Annual Conference at the Hilton Washington Hotel in Washington, D.C.

Additional information on the National Association for Equal Opportunity in Higher Education and NASA's commitment to education can be found on the Internet at: *http://www.nafeo.org/*

SHOT signs Space Act Agreement with NASA

SHOT release

Space Hardware Optimization Technology Inc. (SHOT) of Greenville, Ind., signed an agreement March 19 with NASA that allows the company to conduct flight experiments for commercial customers on the agency's Space Shuttles. It is now one of only four non-university-based companies in the nation with such an agreement with NASA.

"The Space Shuttle fleet has long been used for grant-based, pure-science investigations," said SHOT President and CEO Mark S. Deuser. "Less often have corporations been able to conduct industry-driven product research in space. We're excited to be able to begin offering commercial customers an additional opportunity to participate in microgravity studies."

Pharmaceutical, biomedical, biotechnology and other types of companies that have conducted research in space mostly have done so through one of NASA's Commercial Space Centers, often based at universities, which receive base grants from the agency. SHOT will not receive NASA base grant funding for its commercial projects.

"One of NASA's objectives is an increase in the use of space for commercial products and services," said Mark Nall, head of the Space Product Development office at the Marshall Center. "SHOT's independent marketing of space for industrial research helps us meet that objective."

Property Awareness Month

Center to sell excess items at retail sale and auction

by the Property Management Group

Marshall Center customers and the general public will be given the opportunity to purchase federal excess personal property directly from Marshall through either a retail sale April 4 or a disposal auction April 5.

The retail sale will be at Bldg. 21 of the Intergraph Complex on Dunlop Boulevard in Huntsville. Fifty computer systems — computer, monitor, keyboard and mouse — will be sold.

Items ranging from computers to forklifts will be available at the disposal auction at Marshall Bldg. 8025. It will consist of 370 lots of equipment totaling approximately 4,500 different items. Information concerning these two sales along with the items to be sold can be found at: *http://sales.gsfc.nasa.gov* or by calling the Sales Hotline Number at 544-4667.

In accordance with MWI 4300.1, "Disposal Turn-Ins/ Reutilization Screening," the Marshall Center is using the electronic Service Request System (SRS) as the official request mechanism for obtaining property excess and disposal services. Every Center employee can go to the SRS site at: *http://srs.msfc.nasa.gov/catalog/bin/home.asp* and fill out an electronic request form to have their excess removed. For more information, call Brian Caden at 544-3866 or William Strickland at 544-5682.

NSSTC

Continued from page 1

resources together to meet the demands of an ever-changing world," Stephenson said. "We have set out to create a research center designed to revolutionize science and technology."

The NSSTC was formed with NASA and the State of Alabama through the Space Science and Technology Alliance — a group of six research universities, including the University of Alabama in Huntsville; Alabama A&M University in Huntsville; Auburn University in Auburn; the University of Alabama at Tuscaloosa; the University of Alabama at Birmingham; and the University of South Alabama in Mobile.

"The NSSTC brings together extraordinary resources from NASA, Alabama research universities and industrial partners to create world-class research teams in targeted areas of space science and technology," Franz said. "UAH is proud of the support and achievements it has given to NASA and Marshall Space Flight Center in the past. We're honored to play a significant role in enhancing participation of our sister campuses in the future. Working together, we can create great opportunities and great successes."

"The possibilities are unlimited for the National Space Science and Technology Center," said U.S. Sen. Richard Shelby of Alabama. "The NSSTC is the ultimate combination of the finest researchers and educators, with cutting-edge resources and technology. This is a great moment for the State of Alabama and for Marshall Space Flight Center."

Monday's ceremony was the culmination of a process that began in 1995, when NASA Administrator Dan Goldin advocated establishing a new science institute in Huntsville. In August 2000, the partnership to operate the NSSTC was formally endorsed and an agreement signed by Stephenson and Alabama Gov. Don Siegelman — an event also attended by Franz and Cramer.

"The National Space Science and Technology Center has been one of my top priorities and our federal investment into this project demonstrates our continued commitment to ensuring the success of this unique partnership," said Cramer. "This center has the potential of boosting science and technology education across the state. I believe in this project and its ability to keep Alabama at the leading edge of science and space research."

A venture for pooling talent and resources in pursuit of new knowledge, the NSSTC also fosters the education of the next generation of scientists and engineers, with educators gaining experience, while undergraduate and graduate students participate in the cooperative research.

The core facility is located in a 120,000 square-foot facility on Sparkman Drive in Cummings Research Park, with an 80,000 square-foot laboratory annex planned for later this year. At full capacity, the center will house approximately 450 people from NASA, other government agencies, academia and private industry. In addition, virtual capabilities are located throughout the state and nation at partner facilities.

The writer, employed by ASRI, supports the Media Relations Department.

Photo by Emmett Given, NASA/Marshall Space Flight Center

Marshall Center Director Art Stephenson, at podium, recognizes distinguished speakers at the dedication of the National Space Science and Technology Center. Seated from left are UAH President Frank Franz, U.S. Rep. Bud Cramer of Alabama, and Alabama State Sen. Tom Butler.

For FIRST Robotics competition

All three Marshall-sponsored teams head to Orlando

by Debra Valine

With the regional competitions in the For Inspiration and Recognition of Science and Technology (FIRST) robot championship completed, the three Marshall-sponsored teams are advancing to the nationals in Orlando, Fla.

The three teams — Arab High School "Dragon Slayers" in Arab, Ala.; Lincoln County High School "Bird Brains" in Fayetteville, Tenn.; and Lee High School "Knight Riders" in Huntsville — all won trophies in the regionals and will proceed to the national competition April 5-7 at the Epcot Center. More than 320 teams from across the nation will compete.

Each team had six weeks to design, build and test their robots to prepare for the regional competitions. The competition this year is a game called Diabolical Dynamics. At the regionals, randomly assigned teams partnered to form alliances. Each alliance consisted of four teams. The alliances worked together to score points by placing balls into two 7-foot goals, positioning the robots in the end zone at the end of the match or moving the goals onto a semi-stable bridge — all within two minutes.

Two Marshall employees are working with the Arab Dragonslayers: Brent Hipp, a systems engineer in the Space Transportation Directorate and Mike Leberman, a subsystems manager for the Space Shuttle Main Engine in the Space Shuttle Projects Office. Both have family ties to the Arab school.

In addition to receiving engineering assistance from Marshall volunteers, many area companies assisted each of the schools with their projects.

The following is an account of the Arab team at the regional competition in Florida.

Before the competition

"We were all novices," Leberman said. "And, boy, during our first meetings, you could tell we were all novices.

"Brent gave us the basic design," Leberman said. "He told us he wanted us to be able to go under or over the obstacles on the course. I was really skeptical about going under, but once we got into the design, it was probably the best move." The Arab robot was one of only four teams at Kennedy that could go under an obstacle. According to Hipp, that feature was key to their success.

In addition to the two engineers from Marshall; Robert Young Sr. from Patterson Machine Inc. in Union Grove; Jamie King from Benchmark Electronics in Huntsville; and Mike King of Arab worked together to design the robot. Jamie King designed the arm; Young designed the ball manipulator; Hipp, the electronics and Leberman, the chassis. Mike King designed and built the motor mounts. The students machined the wheels, generated a Web site with animations, a journal and a video of their project as part of the competition.

"Once we got the basic design done, and the strategy planned, we moved from the school to Patterson Machine," said Leberman, who drew the designs. "Roy Patterson III and Robert Young Jr. helped us a lot. It was there that things really started moving. "Without the people at Patterson, we could not have made the components we needed."

As the competition drew closer, it got more and more intense, and later and later at night. "On that last night, Brent and the guys stayed until the wee hours to get it ready," Leberman said.

"I elected to go on the bus with the kids," Leberman said. "Our motto was 'show no fear.' The bus ride was quite an adventure — all night on the bus after working all day."

Lee High School "Knight Riders" team members, from left, Jeff Hunger, Geoff Beech, Charles Cowen and Jesse Pollard, apply finishing touches to their robot.

Lincoln County High School team members of Fayetteville, Tenn., competed in the regional competition at Langley Research Center.

The First Day

On Thursday, the teams unpacked and assembled their robots. "Then we practiced," Leberman said. "During the first stage of practice, the students literally destroyed the robot. So, we took it back to our cubicle in the shop.

"We had two of the replacement parts we needed, but had to scrounge for the others," he said. "Thanks to the generosity of another team, we were able to get the other two parts. Without them, we would not have been able to go into competition. That is the way all of the teams were: cooperative and generous."

"After it was all back together, we had one student who said he would be responsible for all the batteries," Hipp said. "He destroyed both cables, so we had to scrounge battery cables. Bob Jones High School from Madison — which competed at both Kennedy and Johnson, but were sponsored by Daimler-Chrysler, not Marshall — provided not only the battery cables, but also the equipment to solder it back together. Ed Sparks of Bob Jones helped put it back together. We had five minutes time remaining in the pits before the pit area closed for the day. We could not have done it without their help. The Bob Jones team really cheered us on all through the competition."

"Just before competition, we had to certify the robot," Leberman said. "It had to fit into a box 30 inches by 36 inches by 60 inches and weigh 130 pounds or less. We made this about one hour before inspection closed. Our robot weighed in at 130.0 pounds.

"During the first day of competition, we did mediocre because it was our first time," Leberman said. "A lot of the teams were the same way. At the end of the first day, we were in fifth or sixth place."

The Second Day

Friday didn't go as well.

"It was our bad day," Leberman said. "We played six matches. We just couldn't seem to do right, and the teams in our alliance couldn't do right. I think in one match we scored the lowest score — a 22 — our robot scored all the points. We finished the day in 26th place. "We really had to work to pep the kids up for that last day of competition."

The Last Day

Saturday was the last day of the regular competition.

"We scored 228 points, 200 points and 275 in our three matches," Leberman said.

The first eight place finishers in the competition would go to the final round. Those eight teams picked three more teams, one as an alternate. Arab finished the competition in ninth place, but was one of the teams selected to go to the finals.

"Alliances one and four played the first match and scored about 200 points," Leberman said. "We were alliance three. We played alliance 2.

"The whole competition, we had been told that 414 was the highest score a team scored at either of the regionals played that weekend. That was the number to beat. In our first match in the finals, we scored a 416. Then we scored at 490 in the second match. After that we were unstoppable. On the third try, we scored a 416. The final score is the highest score of the three matches, which, for us, was 490.

"The top seed alliance fell apart," Leberman said. "They looked like "bump-ems" (bumper cars) out there, just moving around bumping into each other. They scored a 77.

"They had scored consistently well prior to that," Leberman continued. "Their average team score was 258 — the overall average for all 40 teams of the Kennedy regional was 115. Arab's average score was 141."

"You had to score a lot of points quickly," Hipp added. "They just fell apart because of the pressure. Our students were as cool as cucumbers out there. They never waivered."

Overall Perspective

"It taught the kids a little science and engineering, and a lot of teamwork," Leberman said. "The competition really stressed teamwork. Without that, you wouldn't go anywhere. For me, it was enjoyable to watch the kids start out as neophytes and progress through to be really good competitors. I have already signed up to go do it again."

The writer, employed by ASRI, is the Marshall Star editor.

For Inspiration and Recognition of Science and Technology (FIRST)

And the winners are:

Arab High School, Kennedy Space Center, March 1-3
- **General Motors Industrial Design Award for the best designed robot**
- **Highest Rookie Seed Award — for finishing in ninth place — the highest rookie score**
- **Regional Championship — for being in the alliance of robots who won the overall tournament**

Lincoln County High School, Fayetteville, Tenn., Langley Research Center, March 8-10
- **Placed 10th in the preliminary rounds**
- **Judges Rookie All-Star award**
- **Best Feature Award**

Lee High School, Huntsville, Johnson Space Center, March 16-18
- **Finished in third place**
- **Captain for the No. 3 Alliance in the finals**
- **General Motors Industrial Design Award**

"All three Marshall-sponsored teams came home with trophies, placed high in the rankings and just did an overall exceptional job. I am so proud of all the accomplishments and can't wait until the Nationals," said Vicki Smith, one of the program coordinators in Marshall's Education Programs Office.

Listen to Earth's 'songs,' tweeks and whistles live on the Web from the Marshall Center

If humans had radio antennas instead of ears, we would hear a remarkable symphony of strange noises coming from our own planet.

Scientists call them "tweeks," "whistlers" and "sferics." They sound like background music from flamboyant science fiction films.

But this is not science fiction. Earth's natural radio emissions are real. And, although we're mostly unaware of them, they are around us all the time.

"Everyone's terrestrial environment almost literally sings with radio waves at audio frequencies," says Dennis Gallagher, a space physicist with the Space Science Research Center at the National Space Science and Technology Center in Huntsville — a partnership with the Marshall Center, universities and federal agencies.

"Our ears can't detect radio waves directly, but we can convert them to sound waves with the aid of a very low frequency (VLF) radio receiver."

VLF receivers are simple, yet uncommon. Consisting only of an antenna and an audio amplifier, they are sensitive to radio waves with frequencies between a few hundred Hertz and 10 kilohertz. For comparison, AM broadcast band radios span the much higher frequency range 540 kilohertz to 1.7 megahertz.

With an Internet connection, you can now listen to a VLF radio anytime. Gallagher and his colleagues recently installed a VLF receiver at the Marshall Center's Atmospheric Research Facility. Twenty-four hours a day, it broadcasts the peculiar songs of Earth live on the Web.

The source of most VLF emissions on Earth is lightning. Lightning strokes emit a broadband pulse of radio waves, just as they unleash a visible flash of light. VLF signals from nearby lightning, heard through the loudspeaker of a radio, sound like bacon frying on a griddle or the crackling of a hot campfire. Space scientists call these sounds "sferics," short for atmospherics.

Gallagher

Even when there is no lighting in a listener's area, they can still hear VLF crackles from storms thousands of miles away. Radio waves can propagate even greater distances by bouncing back and forth between our planet's surface and the ionosphere — a layer of the atmosphere ionized by solar ultraviolet radiation. The ionosphere, which begins about 55 miles above the ground and extends to thousands of miles in altitude, makes a good over-the-horizon reflector of low frequency radio waves.

"The ionosphere and the surface of the Earth form a natural waveguide for VLF signals," explains Bill Taylor, a space scientist at Goddard Space Flight Center in Greenbelt, Md. Sferics that travel very far through the waveguide become "tweeks," which produce a musical ricochet sound in the loudspeaker of a VLF receiver.

Tweeks sound as they do because "their high frequency components reach the receiver before their low frequencies do," says Taylor. This is called delay dispersion, a result of waves traveling between the ground and the ionosphere.

Sometimes the ionosphere leaks lightning pulses into space. They exit the atmosphere entirely, following magnetic field lines that guide them 6,000 miles or more above Earth's surface, into our planet's magnetosphere and then back again.

"Lightning pulses that travel all the way to the magnetosphere and back are highly dispersed, much more so than tweeks," continued Gallagher. "We call them 'whistlers' because they sound like slowly descending tones. Whistlers are dispersed, because they travel great distances through magnetized plasmas."

Lightning strikes somewhere on Earth nearly all the time (about 100 times per second), so strange-sounding VLF signals are constantly traveling around our planet. "The best time to listen is usually around sunset or dawn," says Gallagher. "That's when electron density gradients that act as natural waveguides form in the local ionosphere."

Gallagher built the online receiver from an INSPIRE VLF radio kit. INSPIRE, which stands for "Interactive NASA Space Physics Ionosphere Radio Experiments," is an educational program based at Goddard led by Bill Pine, a high school science teacher in Ontario, Calif., and Bill Taylor.

To hear sample VLF radio sounds, or to listen to the online receiver itself, visit SpaceWeather.com's online INSPIRE page at: *http://www.spaceweather.com/glossary/inspire.html*

NASA photo

Lightning, as seen from Space Shuttle Columbia, is the source of most Earth "songs."

Center Announcements

Great Moonbuggy Race

The 8th annual Great Moonbuggy Race will be held April 6-7 at the U.S. Space & Rocket Center. Marshall employees, families and retirees get in free by showing their NASA badges at the information center in the lobby or by showing their Space & Rocket Center badges.

Small Business Showcase

Marshall's Procurement and Small Business Office and the Muscle Shoals Chamber of Commerce are co-sponsoring a Small Business/Industry Showcase, featuring how to do business with the Marshall Center, from 8:15 a.m.-5 p.m. April 5 at the Florence Conference Center at 10 Hightower Place in Florence. The closing reception is open to the public, from 4-5 p.m.

Breast cancer awareness

A breast cancer awareness lunch and learn workshop will be held from 11 a.m.-noon April 11 in Bldg. 4200, room P110. NASA government and contractor employees may attend. For reservations, call Rita Evans-McCoy at 544-7507.

Clubs and Meetings

AIAA luncheon

The American Institute of Aeronautics and Astronautics (AIAA) will meet for lunch at 11 a.m. April 11 at the Redstone Arsenal Officers' and Civilians' Club. AIAA fellow Gordon A. McKinzie of United Airlines will discuss how Boeing and United worked together to build a "market driven" aircraft. Cost is $12. To attend, call 461-4398 or send e-mail by noon April 9 to: gordon.lowrey@ums.msfc.nasa.gov

Procurement Office meets

The Procurement Office retirees will meet for breakfast at 9 a.m. April 3 at Five Points Restaurant. For details, call Carl Melton at 837-5604.

NASA Exchange

NASA goes to the Stars

The NASA Exchange is sponsoring the Huntsville Stars' opening night game against West Tennessee Diamond Jaxx at 7:05 p.m. April 13 at Joe Davis Stadium in Huntsville. STS-98 Shuttle Commander Kenneth Cockrell will throw out the first pitch. Free tickets are available to all Marshall team members and families from admin officers.

Easter Egg Hunt

Marshall's annual Easter Egg Hunt will be at 2 p.m. Saturday at the Marshall Picnic Area.

Sports

Soccer season

MARS soccer will start this year the first week of April. Participation in the MARS Soccer Club is available to all NASA personnel and contractors. Pickup games will be held the week prior to the start of the season. The soccer club is looking for players. For more information, call Andy Heaton at 544-3839.

MARS golf tournament

A skins tournament will be played at 7:30 a.m. April 21 at Goose Pond Plantation. Entry deadline is April 13. The entry fee is $5. Greens and cart fees will vary depending on the course. To enter, call Joey Butler at 544-3808.

'Spacelink' wins Brewer Trophy

Jeff Cobb, left, of Computer Sciences Corp.; Jeff Ehmen, center, of Marshall's Education Programs Department; and Alan Cunningham of Computer Sciences Corp. accept the Brewer Trophy for the Spacelink Web site March 15 during the National Congress on Aviation and Space Education in Minneapolis. The Brewer Trophy recognizes Spacelink's contributions to the educational community for pioneering quick and easy electronic access to NASA information and educational materials.

Employee Ads

Miscellaneous

★ One ticket to "Annie Get Your Gun," orchestra row H, 2 p.m. April 29, $42. 881-0755
★ SW encyclopedia, 3v, $60; TB dictionary, $20; 1989 Merck Index, 11th Ed., $15; 1976 CRC, 56th Ed, $10. 722-9483
★ Lemonhead Bearded Dragon lizard with aquarium and accessories, $225. 922-9387
★ Boat trailer, single axle, holds up to 19.5' ski boat, $400 obo; Mills Pride cabinets w/ shelves, 48"x24"x24", light oak finish, $25 ea. 325-6000
★ Water storage barrel, 55-gallon, plastic w/ dispensing pump and plug wrench, $40; three fishing rods & reels, $20 ea. 772-0558
★ Rectangular brass & heavy beveled-glass dining table, 71x39.5x29, $345. 355-3089
★ Little Tykes table/chairs, $10; Lion King II comforter and dust ruffle, $25. 776-9165
★ Snapper riding mower, rear engine, 8HP, $500. 461-6337
★ Vermont Castings fireplace insert w/built-in blowers, $500 obo. 536-5567
★ Extension ladder, fiberglass, 28', $175; Link Taylor full-size bedroom set, solid pine, $650. 464-6933
★ Coffee table, teak w/tile, $100 obo; entertainment center, holds 27" TV, VCR, stereo, storage, $75 obo. 751-2460
★ Sleeper sofa, 3-piece fold-out, navy blue; Panasonic color TV, 21", older model, non-cable ready; $50 each. 751-2131
★ Dinette table w/leaf and six chairs, $95; heavy-duty shore power line w/pigtail, $55; old 78RPM records, 40s & 50s. 881-9421
★ Companion crypt, Faith Memorial Park, Madison Boulevard. 771-0797
★ Ping ISI-K irons, 4-PW V-53 graphite shafts, $350. 423-7231
★ 1993 Harley Davidson Sportster, XLH 883, 14K miles, many extras, $7,500. 882-9053
★ Plastic bedliner for 1985 Ford Ranger, $10. 881-8214
★ Sony SRF202 credit-card sized FM stereo receiver, $20. 722-9483
★ 1998 Fleetwood Sea Pine pop-up camper, 13,500 BTU a/c, refrigerator, awning, extras, sleeps 6-8, $5,300. 653-3625
★ Kirby Heritage vacuum cleaner with all accessories, $110. 881-0656 after 5 p.m.
★ Solar cover reel, fits 18' wide pool, $50 obo; Weslo Cadence 885, 2-8 mph, 2.5HP, $195. 837-3192
★ 1992 Suzuki motorcycle, GSF-400N Bandit, red, 14K miles, $2,200. 859-0729
★ Three trailers: 2-horse w/escape hatch and elec. Brakes, $1,100; 3-rail motorcycle, $150; boat trailer, $200. 883-0568
★ Two digital cell phones, six batteries, home, rapid and car chargers, $100. 883-2125
★ Two entertainment centers; washer & dryer; futon sofa; glass table & chairs; go cart; women's clothes, size 4-6. 603-3790
★ Coffee table w/bottom shelf, slate top, wood, hexagonal shaped, 38"W, 17"H, $125. 883-2653
★ Two cemetery plots, Huntsville Memory Gardens, $1,000. 536-3435
★ 1989 Wellcraft 192 Classic, cuddy cabin, 4.3L V-6, no trailer, dry stored, 450 hours, $6,900. 797-6173
★ Giant Kronos road bike, 58cm, $150. 536-7833
★ Baby mattress, new, never used, 27-1/4"Wx51"Lx6-1'2"H, $20. 883-2948

Vehicles

★ 1996 Chrysler Town & Country van, green/tan leather, quad captains chairs, front/rear A/C, all-power, $13,000. 508-7493
★ 1979 Chevy pickup, 95K miles, tool box, good tires, 8' bed, automatic, $1,750. 650-0677
★ 1998 Honda Civic LX sedan, automatic, PW/PDLs, cruise, silver, new tires, 47K miles, $9,999. 230-6846
★ 1991 Corolla 4-door DX, auto, air, am/fm cassette, 93K miles, $4,000 obo. 539-9491
★ 1993 Dodge Grand Caravan SE, one-owner, many new parts, service records available, $5,100 obo. 895-9520
★ 1987 Mazda B2600 4/4 extended cab, sunroof, good body, needs motor, $1,000 obo. 772-9794/684-2368
★ 1989 Olds Cutlass Supreme, 3.1L, red, 160K miles, $2,100 obo. 837-3192
★ 1993 Oldsmobile Delta 88 Royale, new tires, paint, battery and other, 168K miles, $2,500. 858-0700
★ 1991 Chevy Lumina, 157K miles, Michelin tires, $3,000. 420-4355
★ 1995 GMC Sierra, 5-speed, V-8, toolbox, bedliner, short bed, alloy wheels, anti-lock brakes, tilt/cruise, $6,950 firm. 256-753-2278
★ 1986 Ford Bronco II, red/tan, V-6, 211K miles, 4WD, auto, $1,500 obo. 722-8570
★ 1994 Grand Caravan LE, dual air bags, ABS, rear a/c, $7,000. 519-7627
★ 1992 Mitsubishi Galant, 4-door sedan, maroon, auto, $3,850. 533-2254
★ 1992 Ford Tempo, 6 cylinder, red, automatic, high mileage, 25-30 mpg, $2,500. 256-586-5442 after 5 p.m.

Found

★ Glasses, Bldg. 4312. Call 544-4758 to identify/claim

Free

★ Friendly female dog, needs good home with fenced yard, spayed, has shots. 859-2633

Wanted

★ Used Pentium I or II computer. 837-7209
★ Wrought iron or aluminum outdoor furniture; table, chairs, and lounges. 830-2806 after 4:30 p.m.

Job Opportunities

CPP 01-024-GF, Contract Specialist, GS-1102-13 (multiple positions), Procurement Office. Closes April 4.

CPP 01-025-GF, Contract Specialist, GS-1102-12 (multiple positions), Procurement Office. Closes April 4.

Obituaries

Powers, Mary Wanda Garrison, 63, of Huntsville, died March 16. She retired from Marshall in 1983. She is survived by her husband, William T. Powers.

MARSHALL STAR
Vol. 41/No. 28

Marshall Space Flight Center, Alabama 35812
(256) 544-0030
http://www1.msfc.nasa.gov

The Marshall Star is published every Thursday by the Internal Relations and Communications Department at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Monday noon to the Marshall Internal Relations and Communications Department (CD40), Bldg. 4200, room 101. Submissions should be written legibly and include the originator's name. Send electronic mail submissions to: intercom@msfc.nasa.gov The Marshall Star does not publish commercial advertising of any kind.

Manager of Internal Relations and Communications — Robert Champion
Editor — Debra Valine

U.S. Government Printing Office 2001-633-095-20041

PRE-SORT STANDARD
Postage & Fees PAID
NASA
Permit No. G-27